

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
FCC Seeks Comment on	)	IB Docket No. 04-286
Recommendations Approved by the	)	
Advisory Committee for the 2012 World	)	
Radiocommunication Conference	)	

**COMMENTS OF SES WORLD SKIES**

SES Americom, Inc. (doing business as “SES WORLD SKIES”)<sup>1</sup> hereby submits its comments on the International Bureau’s March 10, 2011 Public Notice seeking input on the recommendations of the Commission’s Advisory Committee (“WAC”) for the 2012 World Radiocommunication Conference (“WRC-12”).<sup>2</sup> The Public Notice noted the differing views expressed by the WAC in documents WAC/128 and WAC/129 and invited parties to submit their views on those documents.

As a worldwide satellite fleet operator,<sup>3</sup> SES WORLD SKIES is vitally interested in the WRC-12 and WRC-15 proceedings of the International Telecommunication Union (“ITU”)

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<sup>1</sup> SES WORLD SKIES is the commercial brand name for the integrated operations of two indirect subsidiaries of SES S.A.: SES Americom and New Skies Satellites B.V. (effective January 1, 2009). The new brand name does not affect the underlying legal entities that hold Commission authorizations or U.S. market access rights.

<sup>2</sup> See FCC Seeks Comment on Recommendations Approved by the Advisory Committee for the 2012 World Radiocommunication Conference, Public Notice, IB Docket No. 04-286, DA 11-447 (March 10, 2011) (“Public Notice”).

<sup>3</sup> SES WORLD SKIES operates a combined fleet of 28 geostationary fixed-service satellites – of which 21 are authorized to serve the United States – that deliver services as diverse as radio and television broadcast and distribution, internet access, data transmission and business and government communications to customers worldwide.

and welcomes the opportunity to provide input on the development of U.S. positions and proposals at these conferences.

In these comments, SES WORLD SKIES sets forth its views on Document WAC/129, which contains two possible proposals for a new WRC-15 agenda item to identify more spectrum for mobile broadband or broadband wireless access systems. The first proposal – “Proposal A” – would look for such spectrum between 400 MHz and 6000 MHz,<sup>4</sup> while the second proposal – “Proposal B” – would look for such spectrum between 400 MHz and 3400 MHz.<sup>5</sup> The WAC could not agree on a single U.S. proposal on this item for WRC-12.

SES WORLD SKIES urges the International Bureau and the Commission to adopt Proposal B rather than Proposal A. Proposal B appropriately limits the search for additional mobile broadband spectrum to the frequencies below 3400 MHz, where the search is more likely to yield useful results.<sup>6</sup>

Spectrum will be suitable for introducing terrestrial mobile broadband networks if the spectrum is underutilized or if such terrestrial systems can feasibly share with existing operations. Neither is the case for the C-band and extended C-band frequencies above

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<sup>4</sup> See Document WAC/129, Attachment 1 to the Public Notice at 14-22.

<sup>5</sup> See *id.* at 23-27.

<sup>6</sup> Proposal B would also exclude other frequency bands below 3400 MHz (960-2000 MHz and 2483-2500 MHz) where studies have already shown that the addition of terrestrial mobile services is not compatible with existing services. As Proposal B indicates in *recognizing e)* of its proposed Resolution, it is well established that there is inherent incompatibility between low-power radionavigation-satellite service (“RNSS”) signals that are provided in the 1164-1215 MHz, 1215-1300 MHz, and 1559-1610 MHz bands and operations by terrestrial mobile systems in the RNSS frequencies and adjacent/near adjacent bands. Further, as Proposal B states in *recognizing f)* of its Resolution, certain frequency bands between 400 and 3400 MHz are used by safety of life services and systems that support safety services, and these bands should not be the subject of study for mobile services. SES WORLD SKIES supports the exclusion of these bands as well from the search for more terrestrial mobile spectrum.

3400 MHz. Specifically, ITU studies have shown that mobile broadband services cannot practically coexist with fixed-satellite service (“FSS”) operations in the same band, and so the introduction of the former would disrupt the latter.<sup>7</sup> Given this basic incompatibility, it is pointless to search for terrestrial mobile spectrum in the frequencies above 3400 MHz that are already used extensively by the FSS today. In addition, a portion of the higher C-band frequencies (the 4500-4800 MHz band) has been set aside by the ITU to ensure that all countries, especially those in the developing world, have access to satellite spectrum. Introducing terrestrial mobile broadband systems would stymie this objective by effectively precluding future use of the spectrum for satellite services.

#### **I. THE FSS RELIES ON C-BAND SPECTRUM TO PROVIDE CRITICAL SERVICES**

As the ITU recognized in 2007 in Report ITU-R M.2109, the C-band downlink frequencies at 3400-4200 MHz and associated uplink frequencies at 5850-6425 MHz are widely and intensely used by the FSS throughout the world:

There is extensive utilization by the FSS of the frequency band 3625-4200 MHz in all ITU Regions of the world (except certain countries in Europe and in Asia) and of the frequency band 3400-3625 MHz in ITU Region 1 (except parts of Europe) and Region 3 (except some countries of Asia). The low atmospheric absorption in these bands enables highly reliable space-to-earth communication links with wide service coverage, particularly in, but not limited to, geographical areas with severe rain fade conditions. The wide coverage enables services to be provided to

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<sup>7</sup> See *infra*, Section II. In addition, for the FSS uplink band at 5850-6000 MHz, there could be significant areas around transmitting FSS earth stations where terrestrial mobile stations would receive interference.

developing countries, to sparsely populated areas and over large distances.<sup>8</sup>

Indeed, SES WORLD SKIES and other commercial satellite operators have launched dozens of C-band satellites into geostationary orbit to provide service using these frequencies. These satellites represent billions of dollars of investment and are used to provide many vital services in the United States and around the world today.

In the United States, the conventional C-band frequencies are used by the FSS to distribute cable, television and radio programming throughout the nation. Sixty million U.S. households are served by cable systems that rely on C-band satellites for the distribution of hundreds of channels of video programming to over 7000 cable headends across the nation.<sup>9</sup> C-band satellites are also used to deliver network and syndicated programming to thousands of television and radio stations nationwide. Moreover, U.S. cable programmers often rely on C-band satellite networks to relay their video programming to affiliates and distributors in other parts of the world in order to reach wider audiences.

In addition to video distribution, the C-band is also used for video contribution. Many domestic and international news organizations use C-band satellites for satellite news gathering, enabling live coverage of breaking news and sporting events from all across the United States and around the world.

C-band satellites are also used in the United States to provide essential

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<sup>8</sup> Report ITU-R M.2109, “Sharing studies between IMT Advanced systems and geostationary satellite networks in the fixed-satellite service in the 3400-4200 and 4500-4800 MHz frequency bands,” (2007) (“Report ITU-R M.2109”) at 4.

<sup>9</sup> See <http://www.ncta.com/Statistics.aspx> (last visited March 25, 2011). The ITU recognized this in 2007 when it noted that “Members of one Broadcasting Association utilize more than 31,000 earth stations in North America to reach over 66 million cable television households.” See Report ITU-R M.2109 at 4-5.

communications links to remote parts of the United States. SES WORLD SKIES, for instance, jointly operates the AMC-8 C-band satellite with Alascom, Inc. (doing business as AT&T Alaska).<sup>10</sup> A second SES WORLD SKIES satellite (AMC-7) provides backup capacity for AMC-8. Both satellites today are used by the two largest telecommunications service providers in Alaska – AT&T Alaska and GCI – to serve the requirements of customers in remote Alaska for basic voice telecommunications as well as more advanced services.

The U.S. government also uses C-band satellites extensively for communications with its embassies and military bases around the world. To cite but one example, the conventional and extended C-band is used to help distribute the Armed Forces Radio and Television Service to members of the U.S. Armed Forces situated around the world.

While the extended C-band frequencies are less robustly used in the United States due to certain restrictions in the Commission's rules, they nevertheless support important services. Inmarsat, for instance, uses the extended C-band frequencies (3600-3700 MHz) for feeder links and TT&C for its global fleet of L-band mobile satellite service ("MSS") satellites. Those spacecraft perform many critical safety-of-life functions by enabling rapid restoration of communications after natural disasters. Inmarsat's MSS satellites, supported as they are by feeder links in the extended C-band, were in the vanguard of disaster relief efforts after Hurricane Katrina, the Haiti earthquake, and the massive earthquake in Japan.

Given the extensive satellite use of the C-band frequencies, this spectrum should not be considered for terrestrial mobile services absent persuasive evidence that new terrestrial mobile services can share the band with existing satellite services. As the next section shows,

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<sup>10</sup> See *GE American Communications, Inc.*, 15 FCC Rcd 23583 (Sat. Div. 2000) (granting SES WORLD SKIES' predecessor GE Americom and Alascom a joint license for the operation of the spacecraft now known as AMC-8/Aurora III).

however, ITU studies have already conclusively demonstrated that it is impractical for terrestrial mobile services to share these bands with existing and future satellite networks.

## **II. ITU STUDIES SHOW THAT TERRESTRIAL MOBILE SERVICES CANNOT SHARE THE C-BAND WITH THE FIXED SATELLITE SERVICE**

At WRC-07, under agenda item 1.4, the ITU considered the identification of new frequency bands for International Mobile Telecommunications (“IMT”) based on analyses conducted in the period between WRC-03 and WRC-07. In the period leading up to WRC-07, extensive studies were performed regarding the ability of “IMT-Advanced” stations to share with C-band downlinks in 3400-4200 MHz and 4500-4800 MHz. These studies are summarized in Report ITU-R M.2109.

The Report demonstrates that it is impractical for the existing FSS to share these bands with IMT. The studies showed that minimum separation distances ranging from tens of kilometers to greater than 100 kilometers would be required between transmitting IMT stations and receiving earth stations in order to avoid interference into the earth station from in-band, co-channel IMT signals.<sup>11</sup> An IMT transmitter operating in an adjacent band would need to be separated from an earth station by up to tens of kilometers to avoid causing interference. At smaller distances (from as close as hundreds of meters to a kilometer or more) an IMT transmitter in an adjacent band would be more disruptive still, capable of causing overdrive of the FSS receiver.<sup>12</sup> Based on these studies, proposals to identify C-band frequencies for IMT on a global or even regional basis were defeated at WRC-07. Instead, footnotes were adopted that

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<sup>11</sup> See Report ITU-R M.2109 at 41-42.

<sup>12</sup> C-band earth station receivers designed to receive very low-power signals from satellites located in the geostationary arc can be overloaded if the earth station is located near high-power transmitters.

identified 3400-3600 MHz for IMT in certain countries only.<sup>13</sup> WRC-07 also adopted a power limit that mobile service stations must meet at the border of other countries in order to protect existing or future earth stations in those areas. As a follow-up after WRC-07, additional studies were conducted regarding broadband wireless access (“BWA”) systems. These studies led to similar conclusions, and are contained in Report ITU-R M.2199 released in 2010.<sup>14</sup>

There is no reason to believe that the mobile broadband systems under consideration in Document WAC/129 would be materially less interfering than the IMT and BWA systems previously studied. As a result, no purpose would be served by repeating the extensive work performed leading up to WRC-07, and again after WRC-07. The ITU has already analyzed whether IMT and BWA can share with FSS and concluded that it was impractical.

### **III. THE PLANNED C-BAND FREQUENCIES SET ASIDE TO ENSURE ACCESS TO SATELLITE SPECTRUM BY DEVELOPING COUNTRIES SHOULD BE PROTECTED FOR SATELLITE USE**

The 4500-5800 MHz satellite downlink band has been specially reserved by the ITU for FSS. Appendix 30B of the ITU Radio Regulations creates an international allotment Plan that grants every country (including developing nations) assured rights to use the 4500-4800 MHz band (and associated uplink band 6725-7025 MHz) at designated orbital locations to provide FSS. WRC-07 performed an overhaul of Appendix 30B, simplifying the procedures and modernizing the technical parameters to make the Plan more useable by all administrations. The United States was instrumental in this work to improve Appendix 30B and led the efforts within

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<sup>13</sup> See Nos. 5.430A, 5.432A, 5.432B and 5.433A of the ITU Radio Regulations, Edition 2008.

<sup>14</sup> See Report ITU-R M.2199, “Studies on compatibility of broadband wireless access systems and fixed-satellite service networks in the 3400-4200 MHz band” (2010).

the Americas to develop an extensive series of changes to the existing Appendix. Internationally, many administrations, particularly developing countries, rely on this frequency band as their guarantee of future access to FSS spectrum. As a result, these nations are very sensitive to any proposals seen as usurping countries' rights under the Appendix 30B allotment plan.

For this reason, the Commission should exclude this frequency band from consideration as a candidate for terrestrial mobile broadband systems. The inability of such systems to share spectrum with FSS earth stations effectively means that the introduction of one will preclude the other. At WRC-12, the United States should not be seen as proposing to preclude developing countries from deploying satellite systems in the Planned C-band frequencies.

#### **IV. CONCLUSION**

For the reasons discussed herein, SES WORLD SKIES urges the International Bureau and the Commission to adopt Proposal B on Document WAC/129, which appropriately limits the search for more terrestrial mobile broadband spectrum to the frequencies below 3400 MHz. Because ITU studies have already shown that such services cannot share with existing and future FSS networks, no purpose would be served by including C-band and



extended C-band spectrum in the frequencies being considered for mobile broadband, as contemplated in Proposal A.

Respectfully submitted,

**SES WORLD SKIES**

By: \_\_\_\_\_/s/\_\_\_\_\_

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